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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,666	10/15/2001	J. Yong Ryu	CDT 1792	3465

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EXAMINER

NGUYEN, CAM N

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,666

Applicant(s)

Ryu

Examiner

Cam Nguyen

Art Unit

1754



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/11/03 (an amendment/response)
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above, claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

Art Unit: 1754

DETAILED ACTION

1. Applicants' remarks and amendments, filed on July 11, 2003, have been carefully considered. Claims 3, 5, 9, & 12 have been amended.

Claims 1-20 remain pending in this application.

2. This application contains claims 13-20 are drawn to an invention nonelected with traverse in Paper No. 4. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 102(e)

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Art Unit: 1754

4. Claims 1-7 & 9-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Frenzel et al., "hereinafter Frenzel", (US Pat. 6,350,717 B1).

Frenzel discloses a catalyst for selective hydrogenation of unsaturated compounds in hydrocarbon streams comprising at least one metal of the 10th group of the Periodic Table of the Elements and at least one metal of the 11th group of the Periodic Table of the Elements on an aluminum oxide support (see col. 11, claim 1). The 10th group consists of the elements of nickel, palladium, and platinum; and the 11th group consists of the elements of copper, silver, and gold (see col. 5, ln 20-23). The content of metal or metals of the 10th group of the Periodic Table of the Elements in the catalyst is at least 0.005% by weight, based on its total mass (see col. 6, ln 3-7). The content of metal or metals of the 11th group of the Periodic Table of the Elements in the catalyst is not more than 3.9% by weight, based on its total mass, (see col. 6, ln 15-24). Specifically, the metal or metals of the 10th group is or are present in an amount of at least 0.005% by weight and at most 2% by weight, based on the total weight of the catalyst (see col. 12, claim 2). The catalyst comprising palladium as metal of the 10th group (see col. 12, claim 3). The catalyst comprising silver as metal of the 11th group (see col. 12, claim 4). The catalyst further comprise other elements other than the metals of the 10th and 11th groups of the Periodic Table of the Elements in its active composition, in particular, it may comprise promoters, such as the alkali metals and alkaline earth metals, e.g., lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, and/or barium, and elements of the 3rd group, e.g., gallium and/or indium, or other promoters such as zinc or fluoride (see col. 6, ln 23-33).

Art Unit: 1754

The type and amount of such promoters need to be optimized in a customary manner for the individual case; in general, the amounts of such promoters added are in the range from a few ppm by weight to a few thousand ppm by weight (see col. 6, ln 33-37). The catalyst support consists of only aluminum oxide, which is made of the known aluminum oxide phases or the known partially hydrated aluminum oxide phases, for example, α -, β -, γ -, δ -, θ - or χ -aluminum oxide, boehmite, pseudoboehmite or a mixture thereof (see col. 4, ln 38-44). The support having a BET surface area of from 2 to 200 m²/g, the total pore volume is at least 0.1 ml/g and at most 1.0 ml/g, and the mean pore diameter is at least 50 nanometers (50nm= 500A) and at most 150 nanometers (150nm=1500A) (see col. 4, ln 44-62).

Regarding claims 1-3, Frenzel discloses the same catalyst containing the same metals, thus meets the claims.

Regarding claims 4 & 6, the claims are met by the reference since Frenzel teaches Zn and K are suitable promoters can be added to the catalyst (see Frenzel at col. 6, ln 23-33).

Regarding claim 5, the claimed support properties: average pore diameter & total pore volume are met by the reference since they fall within the disclosed ranges (Frenzel at col. 4, ln 44-62).

Regarding claim 7, minimum requirement of the claim is a catalyst containing Pd and Ag. The claimed metal contents are met by the teaching of the reference since they fall within the disclosed ranges (see Frenzel at col. 6, ln 3-7, col. 6, ln 15-24, & col. 6, ln 33-37).

Art Unit: 1754

Regarding claims 5 & 10-11, the claimed BET surface area of the support is met by the teaching of the reference since they fall within the disclosed BET surface area (see Frenzel at col. 4, ln 44-62).

Regarding claim 9, it is considered the claimed K amount is met by the teaching of the reference in view of the teaching in Frenzel, that the promoter amount can be ranging from a few ppm by weight to a few thousand ppm by weight (see Frenzel at col. 6, ln 33-37).

Regarding claim 12, Frenzel is silent with respect to the apparent bulk density of the alumina support. However, it is inherent that the same alumina support possesses the same bulk density since both applicants' and Frenzel's alumina support having a mixed crystalline form as specified in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frenzel et al., "hereinafter Frenzel", (US Pat. 6,350,717 B1), as applied to claims 1-7 & 9-12 above, and further in view of Brown et al., "hereinafter Brown", (US Pat. 6,127,310).

Art Unit: 1754

Frenzel discloses a catalyst for selective hydrogenation of unsaturated compounds in hydrocarbon streams as described above, except for bismuth.

However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have incorporated bismuth into the catalyst of Frenzel to obtain an improved catalyst having enhanced selectivity because Brown fairly teaches that bismuth is a useful selectivity enhancer for selective hydrogenation catalyst (see Brown at col. 3, ln 48-55), and the selectivity enhancer can be present in the composition in the range of from about 0.0003 to about 20 (see Brown at col. 4, ln 26-30).

The claimed bismuth amount is met by the teaching of the reference since it falls within the disclosed range (see Brown at col. 4, ln 26-30).

The claimed zinc amount is met by the teaching of the reference since it falls within the disclosed range in view of the teaching, that the promoter amount can be ranging from a few ppm by weight to a few thousand ppm by weight (see Frenzel at col. 6, ln 33-37).

Response to Amendment/Arguments

7. Applicants' amendment/response filed on 7/11/03 has been fully considered, but not deemed persuasive for the following reasons.

Applicants urged, that "Frenzel requires only at least one new Group 10 metal (Ni, Pd, Pt) and one new Group 11 metal (Cu, Ag, Au). The required metals of Frenzel do not include either Zn or Bi (at least one of must be present in addition to Ag for the present invention), thus the

Art Unit: 1754

compositions as disclosed by Frenzel cannot be the same as the present invention. The fact that Frenzel discloses that other elements may be added to the catalyst fails to create a 102 disclosure and in the absence of suggestion that these other elements are essential or should be added for a selective hydrogenation catalyst, that very general disclosure does not sufficient to support obviousness" (applicants' response page 7, last paragraph thru page 8, first paragraph). This is noted, but not found persuasive because applicants have not provided reasons as to why the promoter metals suggested within the Frenzel reference itself cannot be added or a person having the ordinary skill in the art at the time the invention was made would not add those promoter metals to ^{the} catalyst to achieve an improved catalyst.

It is the Examiner's position to conclude that the rejection is still applicable under 102 because it is anticipated by a single reference. Thus, the rejection is maintained.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however,

Art Unit: 1754

will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

9. Claims 1-20 are pending. Claims 1-12 are rejected. Claims 13-20 remain withdrawn due to nonelected (distinct) invention. No claims are allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Cam Nguyen, whose telephone number is (703) 305-3923.

The examiner can normally be reached on M-F from 8:30 am. to 6:00 pm, with alternative Monday off.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 (before finals) and (703) 872-9311 (after-final).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Nguyen/cnn *cnn*
September 22, 2003

Cam Nguyen
Cam Nguyen
Patent Examiner
Art Unit: 1754